AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A method for determining ~~the position and/or orientation~~ at least two spatial degrees of freedom of a creature (3) relative to an environment, comprising of steps of:

connecting a creature to a locating member (4) including a transducer (5), ~~the creature and locating member being mechanically connected so that the relative positions and/or orientations of the creature and the transducer are known and within a limited distance interval,~~

operating said transducer to determine ~~the transducer's position and/or orientation with respect to~~ at least two spatial degrees of freedom ~~relative to the environment by~~ of the transducer relative to the environment by

i) the transducer receiving incident optical signals from at least two signal sources (9) located in the environment and [[by]] recording the relative incident positions of the received signals on a surface of the transducer, and

ii) based on the recorded relative positions of the received signals, calculating and using ~~a direction of each sight line~~ directions $(\varphi_1, \theta_1, \varphi_2, \theta_2, \varphi_3, \theta_3)$ of sight lines extending

between ~~each~~ respective signal source and the transducer ~~to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment through the use of translation coordinates (x, y, z) or angles of rotation (α, β and γ)~~, with respect to at least two of said at least two signal sources, and

determining ~~the position and/or orientation~~ said at least two spatial degrees of freedom of the creature from said at least two spatial degrees of freedom of the ~~transducer's determined position and/or orientation~~ transducer, the creature and the locating member being mechanically connected relative to each other within a known limited spatial interval with respect to said at least two spatial degrees of freedom.

2. (currently amended) A method for determining ~~the position and/or orientation~~ at least two spatial degrees of freedom of a creature (3) relative to an environment, ~~characterized in that the method comprises~~ comprising the steps of:

~~that~~ connecting the creature ~~is connected~~ to a locating member (4) including a transducer (5) ~~so that the relative positions and/or orientations of the creature and the transducer are arranged to be within a limited distance interval~~,

operating said transducer ~~determining the transducer's position and/or orientation with respect~~ to determine at least two

spatial degrees of freedom of the transducer relative to the environment by

i) the transducer receiving incident signals from at least two signal sources (9) located in the environment by means of at least one phased-array and ~~by~~ recording the relative directions of the signals received, and

ii) based on the recorded relative directions of the received signals, calculating and using ~~a direction of each sight line~~ directions (φ_1, θ_1, φ_2, θ_2, φ_3, θ_3) of sight lines extending between ~~each~~ respective signal source and the transducer ~~to determine the transducer's position and/or orientation with respect to the~~, with respect to at least two of said at least two signal sources,

determining said at least two spatial degrees of freedom ~~relative to the environment, and in that the position and/or orientation of the creature is determined by means of the position and/or orientation determined for the transducer~~ of the creature from said at least two spatial degrees of freedom of the transducer, the creature and the locating member being mechanically connected relative to each other within a known limited spatial interval with respect to said at least two spatial degrees of freedom.

3. (original) A method according to claim 2, characterized in that for said signals microwaves are used.

4. (previously presented) A method according to claim 2, characterized in that for said signal acoustic waves are used.

5. (currently amended) A method according to claim 1, wherein, when the creature (3) moves ~~the position and/or orientation of the creature is~~, said at least two spatial degrees of freedom of the creature are repeatedly determined by the transducer (5) repeatedly determining ~~the transducer's position and/or orientation by receiving incident signals from the signal sources (9) in the environment,~~

~~said operating step operates said transducer to determine the transducer's position and/or orientation with respect to at least three degrees of freedom relative to the environment by the transducer, and~~

~~said receiving step receives the incident optical signals from at least three signal sources (9) located in the environment and records the relative incident positions of the three received signals on the surface of the transducer, and~~

~~said calculating step uses the direction of each sight line extending between each of the three respective signal sources and the transducer to determine the transducer's position and orientation with respect to the at least three degrees of freedom~~

~~relative to the environment through the use of the translation coordinates (x, y, z) and the angles of rotation (α, β and γ)~~ said at least two spatial degrees of freedom of the transducer.

6. (currently amended) A method according to claim 1, wherein, ~~the position and/or orientation~~ said at least two spatial degrees of freedom of the creature (3) ~~relative to a preceding position and/or orientation of the creature is determined,~~

~~said operating step operates said transducer to determine the transducer's position and orientation with respect to at least six degrees of freedom relative to the environment by the transducer, and~~

~~said receiving step receives the incident optical signals from at least three signal sources (9) located in the environment and records the relative incident positions of the three received signals on the surface of the transducer, and~~

~~said calculating step uses the direction of each sight line extending between each of the three respective signal sources and the transducer for direct angular measurement of the incident signals to determine the transducer's position and orientation with respect to the at least six degrees of freedom relative to the environment through the use of three translation coordinates (x, y, z) and three angles of rotation (α, β and γ)~~ are determined relative to preceding values of said at least two spatial degrees of freedom of the creature.

7. (currently amended) A method according to claim 1, characterized in that ~~the positions and/or orientations~~ said at least two spatial degrees of freedom determined for the creature (3) are recorded for mapping the movement of the creature relative to the environment.

8. (currently amended) A method according to claim 6, characterized in that ~~the positions and/or orientations~~ said at least two degrees of freedom determined for the creature (3) are recorded for mapping the relative movement of the creature.

9. (currently amended) A method according to claim 1, characterized in that when the creature (3) moves relative to the environment at least one property of the environment is at least one of recorded ~~and/or~~ and mapped.

10. (currently amended) A method according to claim 1, characterized in that said ~~determining of position and/or orientation~~ determination of said at least two degrees of freedom of the creature (3) is performed while the creature moves in a non-predictable way.

11. (currently amended) A method according to claim 1, characterized in that said ~~determining of position and/or orientation~~ determination of said at least two degrees of freedom

of the creature (3) is performed while the creature moves in a trained way.

12. (currently amended) A method according to claim 1, characterized in that when the creature (3) moves, the movement of the creature is directed by means of ~~the position and/or orientation~~ said at least two degrees of freedom determined for the creature.

13. (currently amended, withdrawn) A method for locating a phenomenon (22) in an environment, ~~characterized in that the method comprises that~~ comprising the steps of:

connecting a creature (3) ~~is connected~~ to a locating member (4) including a transducer (5) mechanically connected to a component (23) intended for pointing out phenomena in the environment,

~~that~~ directing the pointing component ~~is directed~~ by the creature towards the phenomenon from at least one pointing position,

operating the transducer ~~determining the transducer's position and/or orientation with respect to at least two degrees of freedom and thereby determining the position and/or orientation of the pointing component for said at least one pointing position relative to the environment by receiving incident signals from at least two signal sources (9) in the environment and~~ to determine

at least two spatial degrees of freedom of the transducer relative to the environment by

i) the transducer receiving incident signals from at least two signal sources (9) located in the environment, and

ii) calculating and using ~~a direction of each sight line~~ directions (φ_1, θ_1, φ_2, θ_2, φ_3, θ_3,) of sight lines extending between ~~each~~ respective signal source and the transducer ~~to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment, and in that the position and/or orientation~~, with respect to at least two of said at least two signal sources,

determining at least two spatial degrees of freedom of the pointing component from said at least two spatial degrees of freedom of the transducer, the pointing component and the transducer being mechanically connected relative to each other within a known limited spatial interval with respect to said at least two spatial degrees of freedom, and

determining at least one spatial degree of freedom of the pointed out phenomenon relative to the environment ~~is determined by means of the position and/or orientation determined for~~ from said at least two spatial degrees of freedom of the pointing component.

14. (withdrawn) A method according to claim 13, characterized in that the pointing component (23) is directed by

the creature (3) towards the phenomenon (22) from two different pointing positions.

15. (currently amended, withdrawn) A method according to claim 13, characterized in that ~~the position and/or orientation~~ said at least one spatial degree of freedom of the pointed out phenomenon is determined by means of a model (28) of the environment.

16. (currently amended, withdrawn) A method for determining if ~~the position and/or orientation~~ at least two spatial degrees of freedom of a phenomenon (22) relative to an environment is in accordance with a reference, ~~characterized in that the method comprises that a creature (3) is connected~~ comprising the steps of:

connecting a creature to a locating member (4) including a transducer (5), ~~so that the relative positions and/or orientations of the creature and the transducer are arranged to be within a limited distance interval, that the~~

defining a reference ~~is defined~~ by the introduction of at least one condition regarding ~~the position and/or orientation~~ at least two spatial degrees of freedom of the locating member relative to the environment,

~~that the position and/or orientation of the locating member relative to the environment is determined with respect to~~

operating said transducer to determine at least two spatial degrees of freedom of the transducer relative to the environment by ~~means of~~

i) the transducer [[by]] receiving incident signals from at least two signal sources [[(9)]] located in the environment, and [[by]]

ii) calculating and using ~~a direction of each sight line~~ directions (φ_1, θ_1, φ_2, θ_2, φ_3, θ_3,) of sight lines extending between ~~each~~ respective signal source and the transducer ~~to determine the transducer's position and/or orientation with respect to the at least two degrees of freedom relative to the environment, and in that the position and/or orientation determined for the locating member is compared~~, with respect to at least two of said at least two signal sources,

determining said at least two spatial degrees of freedom of the locating member from said at least two spatial degrees of freedom of the transducer, the creature and the transducer being mechanically connected relative to each other within a known limited spatial interval with respect to said at least two spatial degrees of freedom, and

comparing said at least two degrees of freedom determined for the locating member with the reference so that at least one possibly occurring state in which said at least one condition is fulfilled may be recorded.

17. (withdrawn) A method according to claim 16, characterized in that the locating member (4) is put by the creature (3) into mechanical contact with an object (19, 30) in the environment for fixing the locating member or a part thereof and thereby the transducer (5) relative to the object so that said at least one condition is fulfilled.

18. (withdrawn) A method according to claim 17, characterized in that the locating member (4) and the object (19, 30) are moved into engagement with each other so that said at least one condition is fulfilled.

19. (withdrawn) A method according to claim 16, characterized in that states in which said at least one condition is fulfilled is recorded only when a further predefined measure is performed substantially at the same time by the creature (3).

20. (currently amended, withdrawn) A method for determining ~~the position and/or orientation~~ at least two spatial degrees of freedom of an object (30) relative to an environment by means of a creature (3), ~~characterized in that the method comprises that the creature is connected~~ comprising the steps of:

connecting a creature to a locating member (4) including a transducer (5),

putting ~~that~~ the locating member ~~is put~~ into mechanical

contact with the object by the creature, ~~that the position and/or orientation of the locating member relative to the environment is determined with respect to~~

operating said transducer to determine at least two spatial degrees of freedom ~~by means~~ of the transducer relative to the environment by

i) the transducer receiving incident signals from signal sources (9) located in the environment, and

~~by~~ ii) calculating and using ~~a direction of each sight line~~ directions (φ_1, θ_1, φ_2, θ_2, φ_3, θ_3) of sight lines extending between ~~each~~ respective signal source and the transducer ~~to determine the transducer's position and/or orientation with respect to the~~, with respect to at least two of said at least two signal sources,

determining said at least two spatial degrees of freedom relative ~~to the environment, and in that the position and/or orientation of the object is determined by means of the position and/or orientation determined for~~ of the locating member from said at least two spatial degrees of freedom of the transducer, and

determining at least two spatial degrees of freedom of the object from said at least two spatial degrees of freedom of the locating member.

21. (currently amended, withdrawn) A method according to claim 20, characterized in that ~~the position and/or orientation~~ said at least two spatial degrees of freedom of the object (30) is determined relative to ~~the object's~~ preceding ~~position and/or orientation is determined~~ values of said at least two spatial degrees of freedom of the object.

22. (currently amended, withdrawn) A method according to claim 20, characterized in that the locating member (4) and the object (30) are moved into engagement with each other for fixing their relative ~~positions and/or orientations~~ values of said at least two spatial degrees of freedom.

23. (previously presented) A method according to claim 1, further comprising the step of:

using a signal receiving direction area that constitutes a solid angle exceeding 0.2 steradianes (sr) and which solid angle is formed by the collected amount of signal receiving directions in which the transducer is arranged to receive incident signals from said signal sources (9).

24. (original) A method according to claim 23, characterized in that the signal receiving direction area constitutes a solid angle that exceeds 1 steradian.

25. (original) A method according to claim 23, characterized in that the signal receiving direction area constitutes a solid angle that exceeds 2 steradians.

26. (original) A method according to claim 23, characterized in that the signal receiving direction area constitutes a solid angle that exceeds 4 steradians.

27. (previously presented) A method according to claim 23, further comprising using of said signal receiving direction area which is topologically connected.

28. (currently amended) A method according to claim 1, characterized in that occurences caused by at least one of the presence of the creature (3) ~~and/or~~ and the actions ~~thereof~~ of the creature are recorded.

29. (currently amended) A method according to claim 1, characterized in that information is transferred from the locating member (4) to the creature (3) via an information communicating means [[(7)]] (6).

30. (previously presented) A method according to claim 1, characterized in that information is transferred from the creature (3) to the locating member (4) via an information

receiving means (7).

31. (original) A method according to claim 29, characterized in that information about the viewing direction of the creature (3) is transferred.

32. (original) A method according to claim 29, characterized in that information about the movement direction of the creature (3) is transferred.

33. (original) A method according to any of claim 29, characterized in that information about the nature of the environment is transferred.

34. (original) A method according to claim 29, characterized in that information about movement paths (16) is transferred.

35. (original) A method according to claim 1, characterized in that information from the locating member (4) is transferred to at least one central computer unit (13).

36. (original) A method according to claim 1, characterized in that information from at least one central computer unit (13) is transferred to the locating member (4).

37. (currently amended) A method according to claim 1, characterized in that information from the transducer (5) is transferred to at least one computer unit [[(13)]] (11) of the locating member (4).

38. (original) A method according to claim 1, characterized in that information from at least one computer unit (11) of the locating member (4) is transferred to the transducer (5).

39. (previously presented) A method according to claim 35, characterized in that information is transferred to the creature (3) through an information transferring means arranged in the environment and controlled by said computer unit (11, 13).

40. (previously presented) A method according to claim 39, characterized in that information from said information transferring means is transferred to the creature (3) through a representation unit (15) of the locating member (4).

41. (original) A method according to claim 1, characterized in that the nature of the environment is recorded by the creature (3) by means of a sensor.

42. (currently amended) A method according to claim 1, characterized in that ~~the position and/or orientation~~ said at least two spatial degrees of freedom of the transducer (5) ~~is~~ are determined by recording the relative incident directions of the signals received by means of the transducer.

43. (currently amended) A method according to ~~claims~~ claim 2, characterized in that that ~~the position and/or orientation~~ said at least two spatial degrees of freedom of the transducer (5) ~~is~~ are determined by receiving incident optical signals from the signal sources (9) in the environment.

44. (new) A method according to claim 2, wherein when the creature (3) moves said at least two spatial degrees of freedom of the creature are repeatedly determined by the transducer (5) repeatedly determining said at least two spatial degrees of freedom of the transducer.

45. (new) A method according to claim 2, wherein said at least two spatial degrees of freedom of the creature (3) are determined relative to preceding values of said at least two spatial degrees of freedom of the creature.

46. (new) A method according to claim 2, characterized in that said at least two spatial degrees of freedom determined

for the creature (3) are recorded for mapping the movement of the creature relative to the environment.

47. (new) A method according to claim 2, characterized in that when the creature (3) moves relative to the environment at least one property of the environment is recorded and/or mapped.

48. (new) A method according to claim 2, characterized in that occurrences caused by the presence of the creature (3) and/or the actions thereof are recorded.

49. (new) A method according to claim 2, characterized in that the nature of the environment is recorded by the creature (3) by means of a sensor.